"indefinite wall," which is characterised by the fact that temperature differences in the parallel planes are exactly proportional to the distances of these planes. According to the experiment, they get the result that this proportionality does not exist, and that conductibility varies much according to temperature.

In my opinion, this absence of proportionality arrived at, proves rather that the experimental conditions were defective, and are in contradiction with the hypothesis of the "indefinite wall" case.

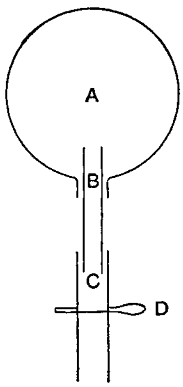
I admit, in principle, the employed method, but I think it should be modified until—for the same temperature of the bath, the said proportionality should be obtained; then, in a new experiment, the temperature of the bath being higher, it should be verified if the proportionality and the conductibility remain, or if the last increases or diminishes with the temperature.

Neuchâtel, August. Robert Weber.

Experimental Mountain-building.

Prof. Johannes Walther, of Jena, requests me to communicate to you the following details regarding an interesting experiment which he has recently devised for teaching purposes: it is intended to explain mountain-formation.

He compares the system of folds on the surface of our slowly-ageing earth to the wrinkles which form on the skin of a drying apple, and points out that the height of our mountain-chains in relation to the mass of the globe is precisely comparable to the wrinkles on the skin of the apple. In order to demonstrate the formation of these folds, he takes an indiarubber balloon (A), and attaches to it a bit of glass tubing (B). On to this is stretched a piece of indiarubber tubing (C), which is pinched close by the stopcock (D). When the indiarubber balloon is blown out to its full capacity, it is spread over with a layer of flour-paste two millimetres thick, and is then dipped and twirled round and round in dry wheaten flour until a perfectly smooth crust, three to four millimetres in thickness, covers the whole sphere. The balloon is then placed on a tripod, so that the indiarubber tubing (C) dips exactly into a glass of water standing below. Thereupon the stopcock is turned open, and the air is allowed to escape in single bubbles; the volume of the ball is lessened, and lateral pressure makes itself immediately felt in the paste-crust. Small folds gradually grow bigger, single folds unite to form systems of folds, flat areas of depression sink deeper and deeper, and the neighbouring folds twirl and cross over the depression. The features of the Cordilleras, of the Jura, and many other well-known tectonic relations are thus reproduced with striking accuracy. Whenever it is desired to repeat the experiment, one need simply blow the balloon out again, smooth out the folded surface by dipping and twirling in dry flour, and all is ready for another demonstration.



London, August 26. L. Belinfante.

Joseph Thomson.

In Mr. Gregory's sympathetic notice (Nature, p. 440) of Joseph Thomson, he hardly does justice to the memory of the deceased traveller in relation to the scientific results of his expeditions; at least so far as botany is concerned. During his too short career Thomson presented three considerable collections of dried plants to Kew. The first, which appears to have been made on his own initiative, chiefly between Lake Nyassa and Lake Tanganyika, was secured for Kew in 1880, through the instrumentality of the late Colonel J. A. Grant, F.R.S. This was not the subject of a special paper; yet it contained a number of interesting novelties, some of which have from time to time been published in Hooker's "Icones Plantarum" and elsewhere. Before going out again Thomson carefully studied the means by which his collecting opportunities might be turned to the greatest advantage. Armed with this knowledge he collected even more successfully in the Kilimanjaro and other mountains of Eastern Equatorial Africa. This second collection reached Kew in September 1884, and proved of the greatest scientific importance, being the first adequate illustration of the mountain flora of that region. It contained scarcely 150 species; but the specimens were selected with admirable judgment, and were sufficient for all purposes. It was worked out by Sir Joseph D. Hooker and Prof. D. Oliver, and the very important results recorded in the twenty-first volume of the *Journal* of the Linnean Society. This paper and Thomson's collection will always rank among the classical documents for the study of the phytogeography of Central Africa. Subsequently Mr. Thomson sent to Kew the botanical fruits of his journey to the Atlas Mountains, and although they contained very few previously unknown plants, they were none the less instructive as a sample of the flora of that comparatively little-known part of the world. Had he preserved his health Thomson might have taken his place in the first rank of botanical explorers. He had acquired the rare gift of selection in collecting; of knowing what to secure and what to neglect.

W. Botting Hemsley.

Late Nestlings.

To-day I observed nests of the house-martin underneath the eaves of the clock-tower at Lamlash Pier, on the south and west sides. The parents were busy feeding their young, whose cries I heard. Surely this is a late date for a migratory bird. How are these nestlings to get across the ocean? Jas. Shaw.

Barrhead, September 7.

THE INSTITUTE OF FRANCE.

In a few weeks, at the end of October, the Institut National de France is to celebrate its first centenary. Some words concerning its origin and organisation may be of interest at the present moment.

The Institute is the outcome of a previous scientific society, entirely due to individual initiative. During the first half of the seventeenth century, a few men, between whom love of science was a firm bond, agreed to meet at regular intervals at the house of one of their number, informally, in order to exchange views, to keep each other posted up on their various researches, and to make up an unconventional assembly of congenial spirits. It was more of a temporary or intermittent club than a real society, as we understand the latter now. These men were mostly mathematicians and physicists—for at that time natural science was more in the *werden* than in the *sein* state—and Mersenne, Descartes, Blaise Pascal, Gassendi, are some of them. Their meetings soon attracted public attention, and the great Colbert, anxious for the development of the arts of peace after the Pyrenees treaty had put an end to the war, considered them as being of sufficient importance and utility to take an interest in them, and to support the incipient society officially.

Colbert even made out a full plan of what was to be realised 200 years later; what he organised was a body of scientific men who were to meet at regular intervals, and were divided into three classes—historical scholars, literary men, and, finally, scientific men. The private society of mathematicians and physicists grew into the Académie des Sciences, and each of the three academies met separately in the Bibliothèque du Roi, at Colbert's own residence. The king, as a sign of his approval, gave some money for experiments, and some pensions.

Among the members (no one knows how they were appointed) were Huyghens, Mariotte, Pecquet, Picard, Robertval. The Academy of Sciences, the Académie Française, and the Académie des Inscriptions et Médailles thus lived in harmony, each having its particular pursuits. The history of these academies would take too much space; it is enough to have shown how they originated. They lived on till the Revolution, when they were organised on a new basis, and the Institute came into existence. The whole constitution of France being altered, that of the academies had also to be changed.

The Institute was founded in 1795. Article 298 of the *Constitution du* 5 *Fructidor*, *an* iii. (August 22, 1795) gave it the mission of "registering discoveries, and perfecting arts and sciences," while later laws provided for the details of the scheme, that of the 3 *Brumaire*, *an* iv., *i.e.* October 25, 1795. According to this law, the Institut National—a new name applied to, practically, an old thing—was divided into three classes—scientific (10 sections); moral and political (6 sections); literary and artistic (8 sections). Bonaparte (3 *Pluviose*, *an* xi., January 23, 1803) altered this plan, and added a fourth class, so that the Institute comprised the class of mathematical and physical sciences, with 11 sections; that of French language and literature (no sections); that of ancient language and literature (no sections); and that of fine arts (5 sections). In 1816, upon the return of monarchy, the general plan was respected, but in 1832 a fifth class was added: that of moral and political sciences, which had disappeared in 1803. Those five classes still exist, under the names of Académie Française, Académie des Sciences, Académie des Beaux-Arts, Académie des Sciences Morales et Politiques, Académie des Inscriptions et Belles Lettres. They still dwell in the Palais des Quatre Nations on the Seine, where Bonaparte housed them in 1805.

At present, the Institute is a society of men of eminence, divided into five distinct sub-societies, or academies, each member being at the same time, and as a matter of course, member of this or that particular academy, and of the Institute as a whole. Each academy has its definite purpose, and meets each week on fixed and different days; the Institute, as a whole, meets once a year, in October.

As a whole, the Institute is regulated by a committee of delegates, elected by, and in, the five academies, while each academy has its own president and secretary.

Two points must be noticed in reference to the academies. The one is that the Académie de Medécine has nothing at all to do with the Institute; it is a separate society (of medical men only) quite distinct, without the slightest relationship to any of the above-mentioned academies, or to the Institute. The other is that there is no connection whatever between the Institute or academies which make up the Institute, and the title of Officier d'Académie. To be Officier d'Académie is to have received from the Department of Public Instruction a special decoration (of the *Palmes Académiques*) which is, theoretically at least, more specially destined to persons who serve the cause of education and instruction. The Officiers d'Académie are thousands in number; they have nothing at all to do with the Academies.

Now, as to the membership of the latter.

New members are always elected by the members of each academy. A man considers himself as eligible for such or such academy; all he has to do, when a vacancy occurs in the academy or in the section to which he should belong, considering his previous work, is to declare himself a candidate by a letter addressed to the president of the latter, and to prepare a pamphlet in which he gives the list of his scientific or literary titles, of his works, of his researches or discoveries. of the functions he has occupied, &c.; and this pamphlet he sends or carries to each of the members of the academy. It is customary for every candidate to pay a visit to each of the latter, and then he waits for the result; in the meantime canvassing, in order to secure this or that member's vote when things do not seem to run smoothly. A very amusing book might be written of the anecdotes which are current upon the devices suggested to the candidates by what is called the "green fever," *la fièvre verte*, the fever which takes hold of a man anxious to wear the green-laced uniform which the members of the Institute wear upon official occasions. But such a book could be published only after the death of the author and of those concerned. Generally speaking, however, the Académie des Sciences would contribute little to the making of this book. Each election must be approved by the President of the Republic, and is approved as a matter of course. Each member receives a small *indemnité* of £60 a year.

Each academy has a limited number of members, but in most academies there are different classes of membership. The Académie Française, for literary men, comprises 40 immortals all told, one of whom is perpetual (life) secretary. It has no associates nor corresponding members, and while the members have little or nothing to do as members, save the preparation of a dictionary, and examining works which compete for various prizes, it is the custom for each new member to deliver a very elaborate speech concerning his predecessor, and one of the members answers this *discours de réception* by a speech concerning the works of the new-comer.

The Académie des Inscriptions et Belles Lettres, for men who deal specially with history, comprises 40 members (of whom one is life-secretary), 10 free members, 8 foreign associates, 30 foreign and 20 national corresponding members. Among the foreign associates are Prof. Max Müller, Sir Henry Rawlinson, W. Stokes; among foreign corresponding members, Mr. R. S. Poole, Sir J. Evans, M. A. Neubauer, Sir E. M. Thompson.

The Académie des Beaux-Arts is divided into five sections (painting, sculpture, architecture, engraving, music), and comprises 41 members (one of whom is life-secretary). There are besides 10 free members, 10 foreign associates, and 50 correspondents. Among the associates are Sir J. E. Millais, Sir F. Leighton, Mr. Alma Tadema; among the corresponding members, Prof. H. Herkomer, Sir E. Burne-Jones, Mr. Waterhouse, Mr. R. W. Macbeth.

The Académie des Sciences Morales et Politiques is divided into five sections (philosophy, morals, law, political economy, history), and comprises 40 members (of whom one is life-secretary), 16 free members, 6 foreign associates, 48 corresponding members. Among the foreign associates are Right Hon. W. E. Gladstone and Mr. Henry Reeve; Mr. Robert Flint, Right Hon. J. Bryce, Sir Fredk. Pollock, Right Hon. G. J. Goschen, Bishop Stubbs, and Mr. Lecky are corresponding members.

Last, but by no means least, comes the Académie des Sciences, which certainly exerts the largest influence, and is the most highly considered in public opinion. Divided into eleven sections, it comprises 68 members (of whom two are life-secretaries), 10 free members, 8 foreign associates, 100 corresponding members. Lord Kelvin, Sir Joseph Lister, and Dr. E. Frankland are among the associates. The British Correspondants are as follows:—Mathematical sciences—geometry: Prof. J. J. Sylvester, Rev. Prof. Salmon; astronomy: Dr. J. R. Hind, Mr. Norman Lockyer, Dr. W. Huggins; geography and navigation: Sir George Henry Richards; general physics: Sir G. G. Stokes, Lord Rayleigh. Physical sciences—chemistry: Prof. A. W. Williamson, Sir Henry Roscoe, Prof. W. Ramsay; mineralogy: Dr. J. Prestwich, Sir A. Geikie; botany: Sir Joseph D. Hooker, Dr. Maxwell Masters; rural economy: Sir J. B. Lawes, Sir J. H. Gilbert; anatomy and zoology: Sir W. Flower;

medicine and surgery: Sir James Paget. Prof. Huxley was a corresponding member also.

Each academy has more or less money left to it in order to distribute prizes for different subject-matters; the Académie des Sciences and Académie Francaise are the richest. The Duke d'Aumale has agreed to leave the splendid residence of Chantilly, with the books and collections it contains, to the Institute, and this handsome gift is accompanied by a sum of money to help to keep the castle in good order. It is estimated that, all paid, the Institute will be 100,000 francs richer each year for this gift.

English corresponding members and associates will have a good opportunity of visiting the fine chateau of Chantilly, for on October 26 the Duke opens the doors to all members of the Institute, and bids them welcome. The celebration of the centenary, to which *all* members of each Academy, *all* corresponding members and associates in every country have been, or are being, invited, will last four days. The programme has been given in NATURE (August 8) in full. The only new feature I can introduce, is the programme of the afternoon performance at the Comédie Française, where the best actors of the best theatre in France will play *Les Horaces* (Corneille), *Les Femmes Savantes* (Moliére), and recite a piece of poetry by Sully-Prudhomme. The railway fares will be reduced 50 per cent. for all foreigners invited.

All may be sure to receive a hearty welcome. If the Institut de France does not contain *all* our "best men" in the different departments of knowledge or art, it contains only men of recognised authority. They are men whose aims are noble, and their feelings can but be most cordial towards those whose aims are the same towards their fellow-workers, whatever language they speak, whatever country they come from, towards all whose work and character are high enough to have secured for them the highest recognition French science can award.

HENRY DE VARIGNY.

THE IPSWICH MEETING OF THE BRITISH ASSOCIATION.

COMING after the Oxford year, the meeting at Ipswich is in numbers a comparatively small one; but, from a scientific point of view, everything augurs well. The papers promise to be of more than usual interest, and are so numerous that most of the Sections will have to sit early and late in order to get through all the work before them.

We have previously referred at some length to the work proposed for Sections A, B, C, D, G, and H.

Section D is this year reserved entirely to zoology and animal physiology, under the presidency of Prof. W. A. Herdman.

Prof. A. C. Haddon will read a paper on the exploration of the isles of the Pacific. Dr. Bashford Deane, of New York, is to read two papers—one on an apparatus for catching oyster spat, the other on the ganoids of North America. Prof. McIntosh will open a discussion on British fisheries. A paper will be read by the Rev. T. R. R. Stebbing, on zoological nomenclature and publication. Special interest is likely to be taken in a paper by the President and Prof. Boyce on the subject of oysters and typhoid, by those who propose to join in the excursion to the Colne Oyster Fishery (Colchester), which has just been added to the programme for Wednesday. It is intended to make a large use of the lantern for illustrating papers in the Section.

The provisional programme in Section E (Geography) makes it evident that the Section is, as usual, to be a popular one. After the address of the President, Mr. H. J. Mackinder, an account will be given, by Mr. H. S. Cowper, of a journey over Tarhuna and Gharian in Tripoli; and Mr. J. Batalka-Reis will discuss how to consider and write the history of the discovery of the world. On Friday, the papers will be given by Mr. C. E. Borchgrevink, describing his voyage to the Antarctic Sea; by Mr. H. N. Dickson, on oceanographical research in the North Sea; by Mr. W. B. Blaikie, on the cosmosphere; and by Mr. John Dodd, on Formosa. On Monday, Mr. E. G. Ravenstein will present a report on the climate of tropical Africa; and there will be papers by Mr. G. F. Scott Elliot, on Ruwenzori and East Africa; by Captain S. L. Hinde, on the Congo State; by Mr. J. T. P. Keatly, on the port of the Upper Nile in relation to the highways of commerce; and by Mr. J. L. Myres, on the maps of Herodotus. On Tuesday, Mr. Weston will deal with the New Zealand Alps, and Mr. J. L. Myres with Asia Minor, whilst Mr. A. Trevor Battye will give an account of Kolguev.

In Section F (Economic Science and Statistics), over which Mr. L. L. Price presides, bimetallism appears early on the scene, the arrangement being to devote Friday morning to a monetary discussion, in which representatives of the Bimetallic League and of the Gold Standard Defence Association, and others, are expected to take part. Monday will be given up to a discussion on the state of agriculture, on which question Captain E. G. Pretyman, M.P., will read a paper from the landlord's point of view, and Mr. Herman Biddell one from the tenant's point of view. This discussion has unfortunately been fixed for the same day as the discussion on the relation of chemistry to agriculture in Section B, but it is hoped that by an arrangement of the hours the two discussions may not clash. Other contributions in Section F will be by Mr. H. W. Wolff, on land banks; Mr. H. Moore, on co-operation in agriculture; Mr. E. Cannan, on population; Mr. H. Higgs, on the climbing ratio; and Rev. Frome Wilkinson, on the State and the labourer.

In Section H (Anthropology), in which Prof. W. M. Flinders Petrie presides, ethnology is to play a prominent part. The Section will, therefore, feel all the more the absence of Mr. E. W. Brabrook, who is unable to come to Ipswich on account of the very sad bereavement he has so recently suffered. It has been arranged that the Section shall sit each morning till 12.30 or 1, and then reassemble at 2, on each day except Saturday for a lecture illustrated by the lantern.

Botany is sitting for the first time as a distinct Section (K), under the presidency of Mr. W. T. Thiselton-Dyer. Amongst the papers will be one on Sporangia by Prof. F. O. Bower. Dr. D. H. Scott will speak on fossil botany, with special reference to the researches of the late Prof. Williamson. A paper on fossil botany will also be read by Prof. Solms-Laubach, of Strasbourg. Prof. E. C. Hansen, of Copenhagen, promises a paper on the variation of yeast cells, and Mr. A. C. Seward one on the Wealden Flora. Amongst other foreign botanists attending the meeting is Dr. T. M. Treub, of Java. A special botanical excursion, not figuring as one of the regular excursions, is being arranged.

INAUGURAL ADDRESS BY SIR DOUGLAS GALTON, K.C.B., D.C.L., F.R.S., PRESIDENT.

MY first duty is to convey to you, Mr. Mayor, and to the inhabitants of Ipswich, the thanks of the British Association for your hospitable invitation to hold our sixty-fifth meeting in your ancient town, and thus to recall the agreeable memories of the similar favour which your predecessors conferred on the Association forty-four years ago.

In the next place I feel it my duty to say a few words on the great loss which science has recently sustained—the death of